

Appl. No. 10/814,408
Atty. Docket No. 2002B139/2
Amdmt. dated January 27, 2006
Reply to Office Action of September 29, 2005

Amendments To The Drawings

The attached Replacement Sheet for Figure 1 is submitted in response to the objection to the drawings. All of the numbers in the Figure 1 have been added in accordance with the description in paragraphs [0113] to [0116] of the specification.

Attachment: Replacement Sheet, Figure 1.

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REMARKS/ARGUMENTS

Reconsideration of this application is requested. The claims presented for reconsideration are claims 24 and 30-32.

All claims have been amended to clarify location of various elements of the claimed apparatus. No amendment has been made for the purpose of defining over the prior art or other patentability reasons.

Figure 1 has also been amended as requested by the examiner. Accordingly, no new matter has been added by way of this Amendment and Response.

Drawing Objection

Figure 1 was objected to for failing to comply with 37 C.F.R. § 1.84(p)(5) because it did not include the reference numbers mentioned in paragraphs [0113] to [0116]. A replacement sheet is attached. The drawing has now been amended to correct such informalities.

Claim Rejections - 35 U.S.C § 112

All claims stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

The term "said riser reactor" in lines 3+ of claim 24 was considered to lack antecedent basis, even though the claim used the term in the preamble. Applicants note, however, that in this case the preamble is limiting because it is what provides antecedent basis for the specific claim term. See *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339, 66 USPQ2d 1271 (Fed. Cir. 2003) ("When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention."); *see also C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1350, 48 USPQ2d 1225 (Fed. Cir. 1998) ("[A] preamble usually does not limit the scope of the claim unless the preamble provides antecedents for ensuing claim terms and limits the claim accordingly."). Therefore, the "riser reactor" element recited in the preamble of the claim cannot be read out of the claim, and all such related claim terms have proper antecedent basis.

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The term "solid catalyst particles" in line 5 of claim 24 was also considered to lack antecedent basis, because it was considered to be unclear as to the origination point of the particles. Applicants believe this rejection to be inappropriate. First of all, the term does not refer back to any antecedent, so there can be no lack of antecedent basis. Secondly, the term is used in a phrase that describes a function of the claimed riser reactor outlet element. The particles themselves are not a part of the claimed apparatus. Therefore, this rejection is in error and should be removed.

The terms "regenerator catalyst inlet" and "regenerator catalyst outlet" were also considered to be unclear. In an effort to clarify the terms, an amendment has been made.

A phrase including the term "catalyst transport line" was also considered unclear. Applicants note that there are two different catalyst transfer lines included in claim 24, and an amendment to distinguish these two different lines has been made. Further note is made that the first transfer line corresponds to line 58 of Figure 1, and the second transfer line corresponds to line 32 of Figure 1. As seen from Figure 1, the second transfer line can also be defined as a lift gas riser. This amendment is believed to be sufficient to remove the rejection.

Claims 30-32 were considered to include method limitations rather than structural limitations, and suggestion was made that would correct such limitations. Accordingly, Applicants have made the suggested correction and the claims are now believed to be proper form.

Claim Rejections - 35 U.S.C § 103

Claims 24 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lattner *et al.* (U.S. Patent No. 6,023,005) in view of Hofferber *et al.* (U.S. Patent No. 4,092,722). This rejection is traversed.

This invention can be more completely explained by referring to Figure 1. In the particular embodiment shown in Figure 1, the temperature within a riser portion of the reactor is used as a control point to control catalyst activity. In this case, catalyst activity is controlled by controlling the amount of coke on the overall catalyst composition that comes into contact with the feed. One way to do this is to control the amount of catalyst that is flowed through the

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regenerator and circulated back into the reactor to combine with unregenerated catalyst, and ultimately contact feed to the reactor.

As discussed in the specification, catalyst activity is a function of the amount of coke on the catalyst. In general, the more coke on the catalyst, the lower the activity. However, a certain amount of coke is desirable in order to increase the selectivity of the catalyst to form light olefins such as ethylene and propylene from the oxygenate feed. Either the amount of coke on each of the catalyst particles can be controlled through a partial regeneration process, or the overall coke composition can be averaged through a total regeneration process. In the embodiment in Figure 1, a fluidized bed reactor apparatus is used to remove all of the coke, and the regenerated catalyst is combined with unregenerated catalyst circulating through a bypass loop. The combination of regenerated catalyst and unregenerated catalyst is manipulated by an appropriate control valve arrangement to provide the desired catalyst activity.

The cited Lattner reference shows a type of fluidized bed reactor that includes a riser reactor. The Lattner device, however, differs from the claimed invention in that Lattner does not disclose a lift gas riser that has an upper outlet at the disengaging vessel. The only structure in the Lattner device that might be considered equivalent to a lift gas riser would be line 28, which does not have an outlet at the disengaging vessel. In addition, Lattner does not have a regenerator catalyst circulation control valve capable of being manipulated as a function of riser reactor temperature. Accordingly, Lattner fails to disclose or suggest Applicants' claimed invention.

Hofferber was cited to for disclosing a regenerator catalyst control valve that controls catalyst flow as a function of temperature. The Hofferber control valve, however, differs from Applicants' claimed invention in that Hofferber does not disclose a regenerator catalyst circulation control valve that controls flow of catalyst from the regenerator outlet to a lift gas riser. Instead, the Hofferber control valve is situated to control flow from the regenerator to the reactor riser 3. The reactor riser in Hofferber goes directly to the reactor unit itself, as opposed to Applicants' lift gas riser, which has an upper outlet at the disengaging vessel. Thus, Hofferber has completely different structure from the claimed invention. Hofferber, therefore, taken alone or in combination with Lattner, fails to disclose or suggest the type of apparatus claimed by Applicants.

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Claims 24 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirsch *et al.* (U.S. Patent No. 2,892,773) in view of Hofferber *et al.* (U.S. Patent No. 4,092,722). This rejection is traversed.

Hirsch discloses another type of apparatus similar to that of Lattner. Like Lattner, Hirsch does not have a regenerator catalyst circulation control valve capable of being manipulated as a function of riser reactor temperature. As already noted, the Hofferber apparatus includes a control valve that is situated to control flow from the regenerator to the reactor riser 3, and the reactor riser in Hofferber goes directly to the reactor unit itself. This arrangement differs from Applicants' lift gas riser, which has an upper outlet at the disengaging vessel. Thus, Hofferber could only reasonably suggest coupling his control system directly to Hirsch's one or more riser reactors, which would be a completely different structure from the claimed invention. The combination of Hirsch with Hofferber, therefore, also fails to disclose or suggest the type of apparatus claimed by Applicants.

Double Patenting

Claims 24 and 30-32 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 45-57 of co-pending Application No. 10/325,523 in view of Hofferber *et al.* (U.S. Patent No. 4,092,722). In response, a Terminal Disclaimer is filed with this Amendment and Response. Accordingly, the provisional rejection of claims has been rendered moot.

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CONCLUSION

Having demonstrated that the cited references fail to disclose or suggest the invention as claimed, and all other formal issues having now been fully addressed, this application is in condition for allowance. Accordingly, Applicants request early and favorable reconsideration in the form of a Notice of Allowance.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated, since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1712 (Docket #: 2002B139/2).

Respectfully submitted,



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Date: January 27, 2006

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